

~~4~~ Claims

1. A surfactant mixture for the preparation of solid laundry detergents, comprising
- A) anionic surfactants in amounts of from 0 to 6% by weight and
- B) a nonionic surfactant mixture in amounts greater than 60% by weight - in each case based on the total surfactant mixture -, where the nonionic surfactant mixture comprises

- a) at least one alkyl and/or alkenyl oligoglycoside of the formula (I),



in which R^1 is a linear and/or branched alkyl and/or alkenyl radical having 4 to 22 carbon atoms, G is a sugar radical having 5 or 6 carbon atoms and p is a number from 1 to 10, and

- b) at least one nonionic surfactant of the formula (II)



in which x is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^2 is alkyl radicals derived from an alcohol mixture of: 80 to 100% by weight of linear saturated and/or unsaturated alcohols having 16 to 22 carbon atoms and 0 to 20% by weight of linear saturated and/or unsaturated alcohols having 6 to 14 carbon atoms, and optionally

- c) at least one further nonionic surfactant chosen from the group formed by

- c1) alcohol ethoxylates of the formula (III)



in which y is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^3 is alkyl radicals derived from an alcohol mixture of: 70 to 95% by weight of linear saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and 5 to 30% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with methyl groups, and 0 to 10% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with alkyl groups having at least 2 carbon atoms

- c2) alcohol ethoxylates of the formula (IV)



in which z is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^4 is alkyl radicals derived from an alcohol mixture of: 35 to 55% by weight of linear saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and 10 to 20% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with methyl groups, and 35 to 45% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with alkyl groups having at least 2 carbon atoms

- c3) alcohol ethoxylates of the formula (V)



in which q is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^5 is alkyl radicals derived from an alcohol mixture of: 0 to 10% by weight of linear saturated and/or unsaturated alcohols having

6 to 10 carbon atoms and 40 to 90% by weight of linear saturated and/or unsaturated alcohols having 12 to 14 carbon atoms and 0 to 30% by weight of linear saturated and/or unsaturated alcohols having 16 to 22 carbon atoms

c4) fatty acid polyglycol esters of the formula (VI)



in which s is a number from 1 to 30, R^6CO is linear or branched saturated or unsaturated acyl radicals having 6 to 22 carbon atoms, R^7 is linear or branched alkyl radicals having 1 to 4 carbon atoms and R is hydrogen, methyl and/or ethyl.

2. The surfactant mixture as claimed in claim 1, characterized in that it comprises nonionic surfactants of the formula (II) in which R^2 is an alkyl radical derived from an alcohol mixture of

0 to 2% by weight of linear saturated alcohols having 12 carbon atoms,
3 to 8% by weight of linear saturated alcohols having 14 carbon atoms,
25 to 35% by weight of linear saturated alcohols having 16 carbon atoms,
60 to 70% by weight of linear saturated alcohols having 18 carbon atoms, and
0 to 2% by weight of linear saturated alcohols having 22 carbon atoms.

3. The surfactant mixture as claimed in claim 1 or 2, characterized in that it comprises nonionic surfactants of the formula (II) in which R is hydrogen and x is a number from 4 to 12, preferably 5 to 10.

4. The surfactant mixture as claimed in any of claims 1 to 3, characterized in that it comprises nonionic surfactants of the formula (III) in which R^3 is an alkyl radical derived from an alcohol mixture of

73 to 85% by weight of linear saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and

13 to 25% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with methyl groups and

2 to 7% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with alkyl groups having at least 2 carbon atoms.

5. The surfactant mixture as claimed in any of claims 1 to 4, characterized in that it comprises surfactants of the formula (III) in which R^3 is alkyl radicals from an alcohol mixture of

73 to 85% by weight of linear saturated and/or unsaturated alcohols having 12 to 15 carbon atoms and

13 to 25% by weight of saturated and/or unsaturated alcohols having 12 to 15 carbon atoms and branched with methyl groups and

2 to 7% by weight of saturated and/or unsaturated alcohols having 10 to 15 carbon atoms and branched with alkyl groups having at least 2 carbon atoms.

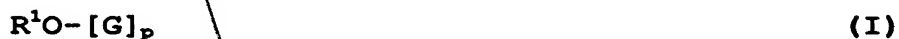
6. The surfactant mixture as claimed in any of claims 1 to 5, characterized in that it comprises nonionic surfactants of the formula (III) in which R is hydrogen and y is a number in the range from 4 to 12, preferably from 5 to 10.

7. The surfactant mixture as claimed in any of claims 1 to 6, characterized in that it comprises nonionic surfactants of the formula (IV) in which R^4 is an alkyl radical derived from an alcohol mixture of 50 to 60% by weight of branched alcohols and 40 to 50% by weight of linear alcohols - based on alcohol mixture.
8. The surfactant mixture as claimed in any of claims 1 to 7, characterized in that it comprises nonionic surfactants of the formula (IV) in which R is hydrogen and z is a number in the range from 4 to 12, preferably in the range from 5 to 10.
9. The surfactant mixture as claimed in any of claims 1 to 8, which comprises nonionic surfactants of the formula (V) in which R^5 is an alkyl radical derived from an alcohol mixture of
- 0 to 5% by weight of linear saturated and/or unsaturated alcohols having 6 to 10 carbon atoms,
 - 55 to 85% by weight of linear saturated and/or unsaturated alcohols having 12 to 14 carbon atoms and
 - 10 to 25% by weight of linear saturated and/or unsaturated alcohols having 16 to 22 carbon atoms.
10. The surfactant mixture as claimed in any of claims 1 to 9, characterized in that it comprises nonionic surfactants of the formula (V) in which R is hydrogen and q is a number in the range from 4 to 12, preferably 5 to 10.
11. The surfactant mixture as claimed in any of claims 1 to 10, characterized in that it comprises nonionic surfactants of the formula (VI) in which R^6CO is an

acyl radical having 16 to 18 carbon atoms, R⁷ is a methyl group, R is hydrogen and s is a number from 10 to 15.

12. The surfactant mixture as claimed in any of claims 1 to 11, characterized in that it comprises alkyl polyglycosides of the formula (I) and the nonionic surfactants of the formula (II) in a weight ratio of from 20:1 to 1:20, preferably 10:1 to 1:5 and in particular from 10:1 to 1:2.
13. The surfactant mixture as claimed in any of claims 1 to 12, characterized in that it comprises the alkyl polyglycosides of the formula (I) relative to the nonionic surfactants of the formula (II) + (III) and/or (IV) and/or (V) and/or (VI) in a weight ratio of from 10:1 to 1:20, preferably 5:1 to 1:10 and in particular 2:1 to 1:5.
14. The surfactant mixture as claimed in any of claims 1 to 13, characterized in that it comprises nonionic surfactants of the formula (II) relative to nonionic surfactants of the formula (III) and/or (IV) and/or (V) and/or (VI) in a weight ratio of from 1:20 to 20:1, preferably 1:10 to 1:1 and in particular 1:8 to 1:1.5.
15. A solid foam-controlled laundry detergent comprising, in amounts of from 5 to 30% by weight - based on detergent -, a surfactant mixture comprising
 - A) anionic surfactants in amounts of from 0 to 6% by weight and
 - B) a nonionic surfactant mixture in amounts greater than 60% by weight - % by weight in each case based on the total surfactant mixture -, where the nonionic surfactant mixture comprises

- a) at least one alkyl and/or alkenyl oligoglycoside of the formula (I),



in which R^1 is a linear and/or branched alkyl and/or alkenyl radical having 4 to 22 carbon atoms, G is a sugar radical having 5 or 6 carbon atoms and p is a number from 1 to 10, and

- b) at least one nonionic surfactant of the formula (II)



in which x is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^2 is alkyl radicals derived from an alcohol mixture of: 80 to 100% by weight of linear saturated and/or unsaturated alcohols having 16 to 22 carbon atoms and 0 to 20% by weight of linear saturated and/or unsaturated alcohols having 6 to 14 carbon atoms, and optionally

- c) at least one further nonionic surfactant chosen from the group formed by

- cl) alcohol ethoxylates of the formula (III)



in which y is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^3 is alkyl radicals derived from an alcohol mixture of: 70 to 95% by weight of linear saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and 5 to 30% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with methyl groups, and 0 to 10% by weight of saturated and/or unsaturated

alcohols having 8 to 22 carbon atoms and branched with alkyl groups having at least 2 carbon atoms

- c2) alcohol ethoxylates of the formula (IV)



in which z is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^4 is alkyl radicals derived from an alcohol mixture of: 35 to 55% by weight of linear saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and 10 to 20% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with methyl groups, and 35 to 45% by weight of saturated and/or unsaturated alcohols having 8 to 22 carbon atoms and branched with alkyl groups having at least 2 carbon atoms

- c3) alcohol ethoxylates of the formula (V)



in which q is a number from 1 to 30, R is hydrogen, methyl and/or ethyl and R^5 is alkyl radicals derived from an alcohol mixture of: 0 to 10% by weight of linear saturated and/or unsaturated alcohols having 6 to 10 carbon atoms and 40 to 90% by weight of linear saturated and/or unsaturated alcohols having 12 to 14 carbon atoms and 0 to 30% by weight of linear saturated and/or unsaturated alcohols having 16 to 22 carbon atoms

- c4) fatty acid polyglycol esters of the formula (VI)



in which s is a number from 1 to 30, R^6CO is linear or branched saturated or unsaturated acyl radicals

having 6 to 22 carbon atoms, R^7 is linear or branched alkyl radicals having 1 to 4 carbon atoms and R is hydrogen, methyl and/or ethyl.

16. The solid laundry detergent as claimed in claim 15, characterized in that it additionally comprises antifoams in amounts of from 0.05 to 5% by weight - calculated as active substance content and based on detergent.
17. The solid laundry detergent as claimed in claim 15 or 16, characterized in that it comprises at least one wax-like compound as antifoam.
18. The solid laundry detergent as claimed in any of claims 15 to 17, characterized in that it comprises at least one wax-like compound and an antifoaming silicone compound as an antifoam.
19. The solid laundry detergent as claimed in any of claims 15 to 18, characterized in that it is in the form of a powder, extrudate, granulate or tablet.
20. The use of surfactant mixtures as claimed in claim 1 for the preparation of solid, foam-controlled laundry detergents.

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Claim
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